

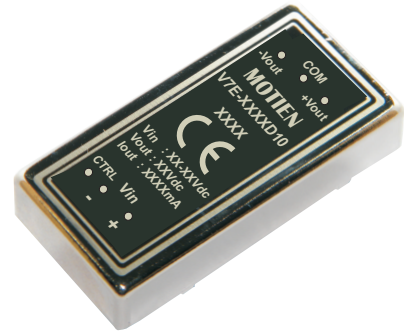
V7E Series

10W 2:1 Regulated Single & Dual output



Features

- Wide 2:1 Input Range
- Full SMD Technology
- 1600~3500 VDC Isolation
- No Minimum Load Required
- Efficiency up to 88%
- Extended Operating Temperature Range -40 ~ 85°C max.
- Continuous Short Circuit Protection
- Over Current Protection
- Soft Start
- EMI Complies With EN55022 Class A



The V7E series is a family of high performance and cost effective 10W single and dual output DC/Dc converters. Encapsulated in a 2"X1" nickel coated brass case, featuring Active clamp switching technology - providing perfect regulation from no load to full load. Which is suitable for network distributed power source. High efficiency up to 88% - Output voltages are available from 3.3V, 5V, 12V, 15V and $\pm 3.3V, \pm 5V, \pm 12V, \pm 15V$ and input ranges of 2:1 ranging from 12V (9V~18V), 24V(18V~36V) and 48V (36V~75V).

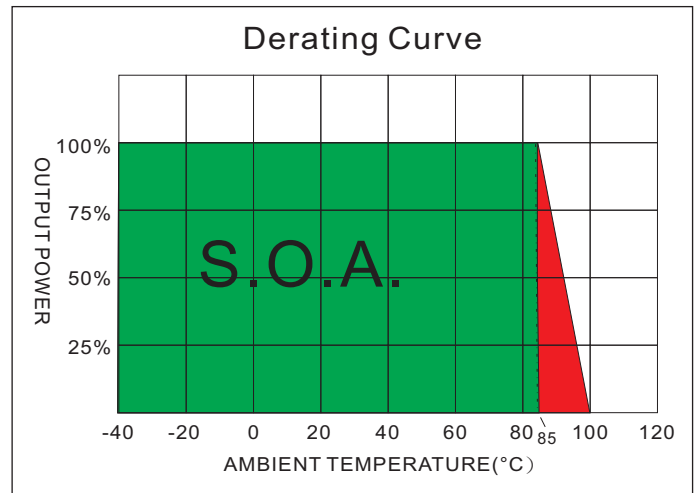
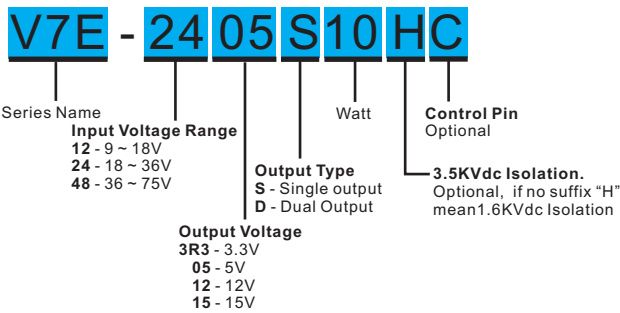
ALL SPECIFICATIONS ARE TYPICAL AT 25°C, NOMINAL INPUT AND FULL LOAD UNLESS OTHERWISE NOTED.

OUTPUT SPECIFICATIONS		EMC SPECIFICATIONS	
Output Voltage Accuracy	$\pm 1\%$, max.	Radiated Emissions	EN55032 CLASS A
Maximum Output Current	See table, max.	Conducted Emissions (8)	EN55032 CLASS A
Line Regulation	$\pm 0.5\%$, max.	ESD	IEC 61000-4-2 Perf. Criteria A
Load Regulation($I_o=0\%$ to 100%)(1)	Single: $\pm 0.5\%$, max. Dual: $\pm 0.5\%$, max. Dual: $\pm 0.8\%$, max(only $\pm 3.3V$)	RS	IEC 61000-4-3 Perf. Criteria A
Cross Regulation (Dual Output) (2)	$\pm 5\%$	EFT(9)	IEC 61000-4-4 Perf. Criteria A
Ripple&Noise (3)	75mVp-p, max.	Surge(9)	IEC 61000-4-5 Perf. Criteria A
Over Current Protection	140% of FL, typ.	CS	IEC 61000-4-6 Perf. Criteria A
Short Circuit Protection	Indefinite(hiccup) (Automatic Recovery)	PFMF	IEC 61000-4-8 Perf. Criteria A
Temperature Coefficient	$\pm 0.02\%/^{\circ}C$	GENERAL SPECIFICATIONS	
Capacitive Load (4)	See table, max.	Efficiency	See table, typ.
Transient Recovery Time (5)	250 μ s, typ.	I/O Isolation Voltage(60sec)	
Transient Response Deviation(5)	$\pm 3\%$, max.	Input/Output	1600Vdc-3500Vdc
		Case/Input & Output	1600Vdc
		Isolation Resistance	1000 M Ω , min.
		Isolation Capacitance	1200 pF, typ.
		Switching frequency	300kHz, typ.
		Humidity	95% rel H
		Reliability Calculated MTBF(MIL-HDBK-217 F)	>1.121 Mhrs
		Safety Standard (designed to meet)	IEC/EN 60950-1
INPUT SPECIFICATIONS		PHYSICAL SPECIFICATIONS	
Input Voltage Range	See table	Case Material	Nickel-coated Copper
Under Voltage Lockout		Pin Material	$\Phi 1.0$ mm Brass Solder-coated
12V Models Module ON / OFF	8.6Vdc / 7.9Vdc, typ.	Potting Material	Epoxy (UL94V-0 rated)
24V Models Module ON / OFF	17.8Vdc / 16Vdc, typ.	Weight	31.0g
48V Models Module ON / OFF	33.5Vdc / 30.5Vdc, typ.	Dimensions	2.00"x1.00"x0.40"
Start up Time (Nominal V_{in} and constant resistive load)	20mS, typ.	ABSOLUTE SPECIFICATIONS (10)	
Input Filter	Pi Type	These are stress ratings. Exposure of devices to any of these conditions may adversely affect long-term reliability.	
Input Current(No-Load)	See table, max.	Input Surge Voltage(100mS)	
Input Current(Full-Load)	See table, typ.	12 Models	30 Vdc, max.
Input Reflected Ripple Current(6)	20mA _{p-p} , typ.	24 Models	50 Vdc, max.
CTRL(7) Module ON	2.5 to 5.5 Vdc or Open	48 Models	100 Vdc, max.
Module OFF	-0.7 to 0.8Vdc or Short circuit pin 2 and pin 6	Soldering Temperature	260°C, max.
CTRL OFF Input Current	2.5mA,typ	(1.5mm from case 10sec Max.)	
ENVIRONMENTAL SPECIFICATIONS			
Operating Ambient Temperature	-40°C ~ +85°C		
Maximum Case Temperature	100°C		
Storage Temperature	-40°C ~ +125°C		
Cooling	Nature Convection		

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V7E - 10W 2:1 Regulated Single & Dual output

PART NUMBER STRUCTURE



MODEL SELECTION GUIDE

MODEL NUMBER	INPUT Voltage Range (Vdc)	INPUT Current		OUTPUT Voltage (Vdc)	OUTPUT Current		EFFICIENCY @FL (% , typ.)	Capacitor Load @FL (µF, max.)
		No-Load (mA, max.)	Full Load (mA, typ.)		Min. load (mA)	Full load (mA)		
V7E-123R3S10	9-18	30	696	3.3	0	2000	81	2200
V7E-1205S10	9-18	30	1028	5	0	2000	83	2200
V7E-1212S10	9-18	30	980	12	0	833	87	680
V7E-1215S10	9-18	30	968	15	0	666	88	470
V7E-123R3D10	9-18	30	696	±3.3	0	±1000	81	±1000
V7E-1205D10	9-18	30	1016	±5	0	±1000	84	±1000
V7E-1212D10	9-18	30	980	±12	0	±416	87	±470
V7E-1215D10	9-18	30	980	±15	0	±333	87	±330
V7E-243R3S10	18-36	25	348	3.3	0	2000	81	2200
V7E-2405S10	18-36	25	508	5	0	2000	84	2200
V7E-2412S10	18-36	25	484	12	0	833	88	680
V7E-2415S10	18-36	25	484	15	0	666	88	470
V7E-243R3D10	18-36	25	348	±3.3	0	±1000	81	±1000
V7E-2405D10	18-36	25	508	±5	0	±1000	84	±1000
V7E-2412D10	18-36	25	490	±12	0	±416	87	±470
V7E-2415D10	18-36	25	490	±15	0	±333	87	±330
V7E-483R3S10	36-75	20	174	3.3	0	2000	81	2200
V7E-4805S10	36-75	20	254	5	0	2000	84	2200
V7E-4812S10	36-75	20	242	12	0	833	88	680
V7E-4815S10	36-75	20	242	15	0	666	88	470
V7E-483R3D10	36-75	20	174	±3.3	0	±1000	81	±1000
V7E-4805D10	36-75	20	254	±5	0	±1000	84	±1000
V7E-4812D10	36-75	20	245	±12	0	±416	87	±470
V7E-4815D10	36-75	20	245	±15	0	±333	87	±330

Suffix "H" means 3.5KVdc isolation

NOTE

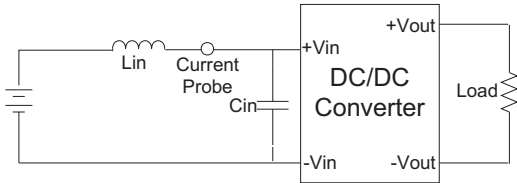
- Load regulation for dual output: minimum load to full load balanced on all outputs.
- One load is 25% to 100% load, the other load is 100% load, the output voltage variable rate is within ±5%.
- Measured with 20MHz bandwidth and 1.0uF ceramic capacitor.
- Tested by minimal Vin and constant resistive load.
- Tested by normal Vin and 25% load step change (75%-50%-25% of Io).
- Measured Input reflected ripple current with a simulated source inductance of 12uH.
- To order the converter with CTRL function, please add suffix C (e.g. V7E-4812S10C).
- Input filter components (C1, L, C2) are used to help meet conducted emissions requirement for the module. These components should be mounted as close as possible to the module; and all leads should be minimized to decrease radiated noise.
- An external filter capacitor is required if the module has to meet IEC61000-4-4 and IEC61000-4-5.
The filter capacitor Motien suggest: Nippon chemi-con KY series, 220uF/100V.
- Exceeding the absolute ratings of the unit could cause damage. It is not allowed for continuous operating.

The models listed above is just for standard type. If you need the special specification product, please contact our service member by telephone presented in shortform cover or e-mail to : sales@motien.com.tw

TEST CONFIGURATIONS

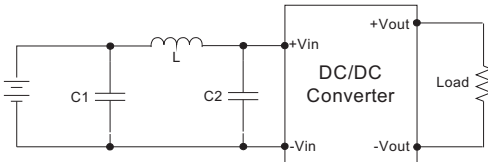
Input Reflected Ripple Current Test Step

Input reflected ripple current is measured through a source inductor L_{in} (12uH) and a source capacitor C_{in} (47uF, ESR<1.0Ω at 100KHz) at nominal input and full load.



EMI Filter

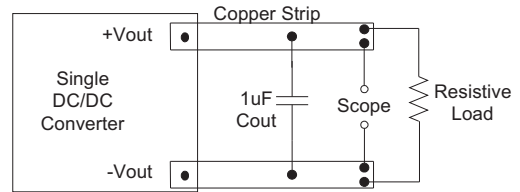
Input filter components (C_1, L, C_2) are used to help meet conducted emissions requirement for the module. These components should be mounted as close as possible to the module; and all leads should be minimized to decrease radiated noise.



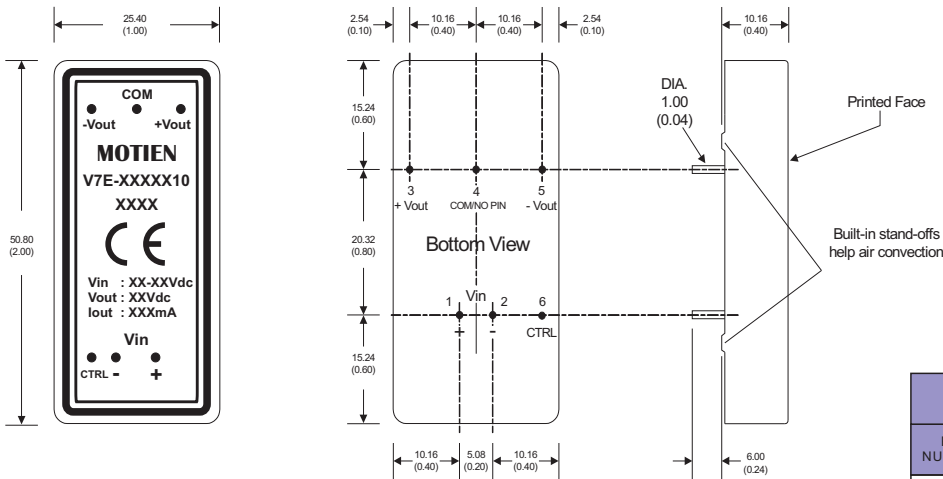
	C1	L	C2
V7E-12XXXXX	330uF/100V	12uH	100uF/100V
V7E-24XXXXX	330uF/100V	12uH	100uF/100V
V7E-48XXXXX	330uF/100V	12uH	100uF/100V

Output Ripple & Noise Measurement Test

Use a capacitor C_{out} (1.0uF) measurement. The Scope measurement bandwidth is 0-20MHz.



MECHANICAL SPECIFICATIONS



PIN NUMBER	Standard		Remote Control(optional)	
	SINGLE	DUAL	SINGLE	DUAL
1	+V Input	+V Input	+V Input	+V Input
2	-V Input	-V Input	-V Input	-V Input
3	+V Output	+V Output	+V Output	+V Output
4	N.P.	Common	N.P.	Common
5	-V Output	-V Output	-V Output	-V Output
6	N.P.	N.P.	CTRL	CTRL

(The Pin Connection of high isolation one is the same with normal one.)

- All dimensions are typical in millimeters (inches).
1. Pin diameter: 1.0 ± 0.05 (0.04 ± 0.002)
 2. Pin pitch and length tolerance: ± 0.35 (± 0.014)
 3. Case Tolerance: ± 0.5 (± 0.02)